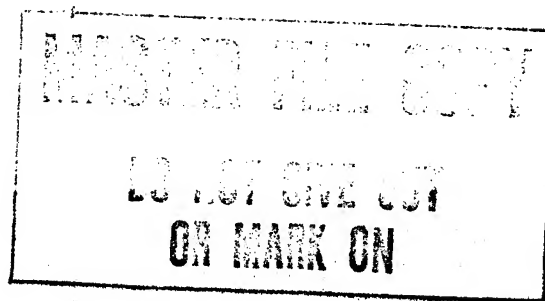




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Prospects for 1983 Soviet Grain Crop: Best in Five Years

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An Intelligence Assessment

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Prospects for 1983 Soviet Grain Crop: Best in Five Years

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An Intelligence Assessment

This paper was prepared in the Agricultural Assessments Branch, Strategic Resources Division, Office of Global Issues, with contributions from the Economics Division, OGI, and the Soviet Economy Division, Office of Soviet Analysis.

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Comments and queries are welcome and may be directed to the Chief, Agricultural Assessments Branch, OGI,

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Key Judgments

*Information available
as of 18 July 1983
was used in this report.*

Barring a major deterioration in weather conditions, it now appears that the USSR is headed for a grain crop of about 210 million tons in 1983, the fourth largest ever and the best performance since the 1978 record of 237 million tons. A crop of this size means that the Soviets could meet all of their estimated grain import requirements for the current marketing year (1 July 1983–30 June 1984) with no difficulty. This fact, combined with the market access they are guaranteed by virtue of agreements with other grain exporters, puts the USSR in a comfortable position to negotiate a new US-USSR Long-Term Grain Agreement. Specifically, we believe that the USSR will probably continue to resist US efforts to increase the minimum purchase commitment above the current 6-million-ton level, while pushing hard to raise the maximum it can buy without further US consultation from 8 million to perhaps 12-15 million tons.

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Prospects for 1983 Soviet Grain Crop: Best in Five Years

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Introduction

Following four poor grain crops in a row, the USSR finally appears headed for a good harvest in 1983. With normal weather for the rest of the season, we believe that the 1983 Soviet grain crop will come in at about 210 million tons, only 10 million tons below our May forecast.¹ Even though a crop of this size would fall well below this year's target of 238 million tons, it would be the fourth largest ever and well above the estimated average annual output of 185 million tons during 1978-82.

Recent Weather and Crop Conditions

As of mid-July, crop prospects throughout most of the Soviet Union remain favorable.² Alternating periods of rainfall and sunshine have promoted plant development and maintained soil moisture reserves at adequate levels in most regions. Based on our analysis of current weather patterns, these conditions will continue through the end of July. Analysis of LANDSAT [redacted] indicates that grain yields may reach record levels in some areas. With few exceptions, Western agricultural and defense attaches have reported that crops are in generally good condition in those areas where they have traveled. In addition, production of chemical fertilizers during January-May 1983 exceeded plan and was up 10 percent over the corresponding period last year, according to official Soviet statistics. Given adequate moisture, properly applied fertilizer is the single most important factor in raising Soviet crop yields.

There have been some problems, however. From late May through early June, the southern Ukraine, the lower Volga Valley, and the northern North Caucasus were hit intermittently with hot, dry wind—referred to by the Soviets as a *sukhovey*—reducing potential yields of both winter and spring grains. By the time

the weather pattern responsible for the *sukhovey* conditions broke on 4 June, [redacted]

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[redacted] crop losses had amounted to about 8 million tons. A reduction in the area sown to grain has also lowered this year's potential crop size, in our judgment, by some 2-3 million tons. On the basis of statistics released by the USSR's Central Statistical Administration on 6 June, we believe that plantings this year will total 121-122 million hectares, below the 124-million-hectare plan and the smallest since 1972. This shortfall is partly the result of weather problems in Siberia at the end of the planting season, but it also reflects a continuing Soviet effort to expand the amount of arable land put into fallow. Although following sacrifices production in the year when the land is idled, it usually results in higher, more stable output in subsequent years as long as the fallowed acreage is maintained in the crop rotation schedule.

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As a result of the *sukhovey*, we now expect winter grain output to be no greater than 55 million tons, below the estimated 60-million-ton average of recent years. Spring grain prospects on the other hand are still quite good despite the shortfall in sown area in the New Lands and minor crop losses stemming from the hot, dry weather in the south. We judge crop conditions to be generally good to excellent in the areas where production has traditionally been highly variable, especially the upper Volga Valley, the Urals, and northern Kazakhstan. We therefore believe a near-record spring grain harvest of some 155 million tons is likely, given continued favorable weather.

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Uncertainties Ahead

With more than three months remaining in the crop season, there is still some uncertainty attached to our estimate. We will be closely monitoring the impact of future weather on potential crop size. With excellent

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¹ For a more detailed discussion of regional grain crop conditions, see appendix A. Our preliminary assessment of the major nongrain crops in the USSR appears in appendix B.

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Table 1
USSR: Grain Production ^a

	1976-80 Average	1979	1980	1981 ^b	1982 ^c	1983 ^d
Grain production	205.0	179.2	189.1	158.0	165.0	210.0
By type:						
Wheat	99.7	90.2	98.2	81.0	83.0	87.5
Coarse ^e	95.1	81.4	80.7	68.0	73.0	108.6
Other ^f	10.2	7.6	10.2	9.0	9.0	13.9
By republic:						
RSFSR	113.9	91.8	105.1	80.0	90.0	118.0
Ukraine	43.1	34.0	38.1	36.0	39.0	43.0
Kazakhstan	27.5	34.5	27.5	24.0	18.0	27.0
Other	20.5	18.9	18.4	18.0	18.0	22.0

^a Measured in bunker weight, that is, gross output from the combine, which includes excess moisture, unripe and damaged kernels, weed seeds, and other trash. For comparison with US or other country grain output, an average discount of 11 percent should be applied.

^b Grain production in 1981 was unofficially reported at 158 million tons. Grain figures by type and by republic represent our estimates.

^c The 165-million-ton figure should be considered our best estimate of last year's Soviet grain harvest, but one that is subject to error. The maximum range of error in our grain crop estimate over the past four years has been ± 8 percent, implying a crop in the range of 152-178 million tons. The US Department of Agriculture currently estimates last year's crop at 180 million tons.

^d Estimated.

^e Coarse grains include barley, rye, oats, corn, and millet.

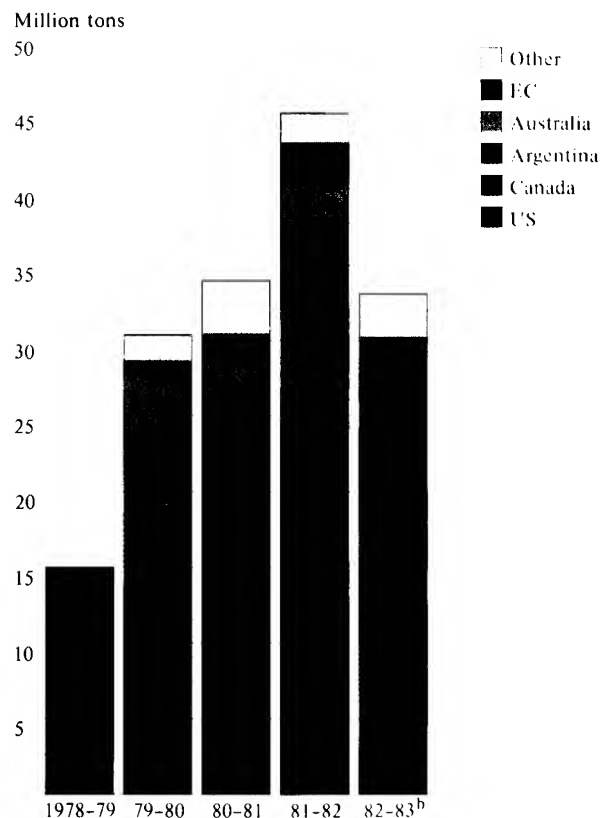
^f Other grains include rice, pulses, and buckwheat.

conditions for the rest of the year, a crop perhaps as high as 215 million tons could result. On the other hand, a 210-million-ton harvest is by no means assured. Although not a problem at the present time, excessive rainfall during the three-month harvest campaign—just under way in the southern grain regions—could seriously hamper combining operations and lead to sizable losses in both grain quantity and quality. Moreover, a bout of hot, dry weather in the spring grain regions east of the Ural Mountains during the next week or two—as grain plants pass through the critical flowering stage—would probably cause considerable damage as well.

The Need for Grain

Even with a crop of 210 million tons, the USSR would still be 15-20 million tons short of the amount of grain we believe necessary to maintain current levels of seed, food, and industrial use, as well as to achieve

Figure 3
USSR: Grain Imports ^a



^a July-30 June.
^b Estimate.

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planned output targets for meat, milk, and eggs.³ This estimate assumes that the mix of feed does not change. To the extent that the share of grain included

³ The USSR records grain production in bunker-weight terms, that is, as the grain comes from the field before cleaning and drying. Our production estimate is also in bunker weight. Uses of grain, however, are recorded in standard weight. Our research has shown that the bunker-weight measure must be reduced by an average of 11 percent to be comparable to the standard-weight measure. The discount varies according to moisture conditions prior to and during harvest, and to crop size, and thus can become either larger or smaller than the 11-percent average as the season advances. Our preliminary estimate indicates a standard-weight grain crop of roughly 190 million tons (given a bunker-weight crop of 210 million tons) and consumption needs of 205-210 million tons.

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in livestock rations declines—a shift noted late in 1982 as record quantities of forage crops such as haylage and silage were harvested—this shortfall could be reduced, perhaps by as much as 5 million tons. Given the current world grain surplus and its comfortable hard currency position, however, we believe that Moscow will be inclined to import as much as 25-30 million tons of grain during the marketing year (MY) which began on 1 July. Under these conditions, some of the imports could either go into stocks—drawn down substantially by poor harvests over the past four years—or be used to bolster further the livestock sector. []

A Buyer's Market

The USSR is well positioned for negotiating grain purchases in MY 1984 (1 July 1983–30 June 1984). Because Moscow has already lined up imports of at least 10 million tons of grain,⁴ a 210-million-ton crop would require at most an additional 10 million tons of foreign grain to cover domestic needs in the current marketing year. Moreover, production expansion programs on the part of US competitors portend a continuing surplus in the world grain market:

- Canada has increased wheat acreage by 9 percent this year and has introduced higher yielding wheat varieties. According to US Department of Agriculture estimates, Canadian grain exports could reach a record 28 million tons, up 600,000 tons from the MY 1983 level.
- The Southern Hemisphere exporters—Argentina and Australia—have yet to announce production goals for MY 1984 since their crops will not be planted until this fall. US agricultural attaches reported, however, that Argentine sowing conditions are very good and that Australia is expected to plant a record wheat acreage.
- With fixed acreage as well as yields among the highest in the world, grain production in the European Economic Community probably will not increase significantly. Recently announced support prices, however, are likely to ensure continued high output levels and grain exports of at least last year's level of 20 million tons. []

⁴ Some 3 million tons of grain may also be scheduled through a protocol agreement signed with France. []

We believe that the major non-US exporters will aggressively seek to expand sales to the USSR or, at least, to maintain their current shares of the Soviet market. Canada will probably continue to court Soviet grain purchases by offering discount prices and government-backed credits. The USSR has become an increasingly important customer, supplanting China as Ottawa's primary importer. The Argentine Agriculture Secretary stated that his country hopes to continue shipping at least 50 percent of its exports to the Soviet Union, and Australian officials have stated publicly that they plan to seek negotiations with Moscow for a long-term accord. []

Implications for the United States

Although the above factors favor the USSR in negotiations for a new US-USSR grain agreement, we believe that long-run considerations will prompt Moscow to hammer out a new Long-Term Grain Agreement (LTA) with the United States before the current accord expires on 30 September. The third round of talks is to be held in Vienna on 26-27 July. The Soviets must certainly realize that good domestic grain harvests and a continuing world grain glut are by no means assured, and that crop failures in the major grain-producing countries could trigger a return to tight markets. [] the Soviets have shown great concern over the impact of the US-acreage reduction program on future US grain supplies. Moreover, Soviet LTAs with non-US exporters will expire beginning in late 1985, and Moscow may want the supply assurances and added bargaining clout of an LTA with the United States.⁵ Moscow can also recall two years ago when its imports reached a record 45 million tons. Although it was not politically expedient, the Soviets turned to the United States for 15.4 million tons of grain. Currently, the USSR has commitments of up to 14 million tons annually under agreements with non-US exporters. These agreements, particularly with Argentina and Canada, assure Moscow diversity in supplies, thereby minimizing the threat of another grain embargo and perhaps paying some political dividends

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beyond their commercial value as well. Thus, in order to maintain its flexibility in grain purchases, Moscow will probably continue to resist US efforts to increase the minimum purchase commitment above the current 6-million-ton level. At the same time, the Soviets are likely to push hard to raise the maximum they can buy without further consultation with the United States from 8 million tons to perhaps 12-15 million tons.

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Appendix A

The 1983 Soviet Grain Crop in Closeup

Crop conditions in the Soviet Union as of mid-July point toward a grain harvest of some 210 million tons, the fourth-largest crop ever and well above the estimated annual output of 185 million tons averaged during the last five years. Growing conditions thus far have been mostly favorable and the production of chemical fertilizer—a key factor in determining crop yields—is up this year. We believe this will largely compensate for the fact that the area sown to grain is the smallest in more than a decade. [REDACTED]

Grain Acreage

Prospects for the 1983 crop would be even brighter except that the area sown to grain is unusually small. We estimate planted area at 121-122 million hectares, below the 124-million-hectare target and the smallest since 1972. Acreage of both winter and spring grains is below the average of the past five years. Soviet press reports and our analysis of weather data indicate that dry soil conditions last fall in important winter wheat areas of the southern European USSR reduced winter grain sowings to the smallest level in a decade. [REDACTED]

The spring sowing campaign, by comparison, got off to one of its best starts ever; by the end of April the amount of grain planted was nearly double that of a year ago and second only to the 1975 record. However, by early June the USSR's Central Statistical Administration reported that planting in the grainlands east of the Ural Mountains—especially Siberia—lagged seven to 10 days behind the average of recent years. Because the planting season there ends in mid-June, we estimate that 1-2 million hectares were not sown. In addition, a Soviet press report indicated that 1 million hectares of land originally intended for grain were instead put into fallow. Since 1975 Soviet farmers have nearly doubled the amount of fallowed land nationwide. Although fallowing sacrifices production in the year when the land is idled, it usually results in higher, more stable output in subsequent years as long as the fallowed acreage is maintained in the crop rotation schedule. [REDACTED]

The Southern European USSR

The only other noteworthy production-limiting factor is the seasonlong weather problems which have plagued the highly productive areas of the extreme southern European USSR, namely the southern and eastern Ukraine, the lower Volga Valley, and the northern North Caucasus. We estimate that, because of the adverse weather, a total of about 15 million tons of potential grain production has been lost since the start of the crop season last fall in this region, which typically produces about 15 percent of the total grain crop. [REDACTED]

Near-drought conditions prevailed there from last fall until early spring, greatly lowering prospects for winter grains, especially winter wheat. [REDACTED]

[REDACTED] many winter grain crops had either perished during the winter or emerged from dormancy in poor condition. Stands were thin, growth was uneven, and many fields were being resown with spring grains. Dry soil conditions were evident across much of the region, corroborating meteorological data and ground observations by the US agricultural attache. [REDACTED]

From late May through early June, these same areas were hit intermittently with hot, dry wind—referred to by the Soviets as a *sukhovoy*. The rapid and premature acceleration of plant development caused by the *sukhovoy* further reduced yields of winter grains and cut spring grain prospects as well. Meteorological data indicated that soil moisture reserves were drawn down to critically low levels in southern Volgograd and Rostov—the areas hardest hit. LANDSAT imagery acquired before and after the *sukhovoy* showed slight to moderate drops in crop vigor, providing confirmation that grain crops were indeed under stress. With harvesting now well under way, only a major deterioration in the weather would cause any further losses. [REDACTED]

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The Northern European USSR

In the remainder of the European part of the country, the outlook for this year's crop is excellent. The sowing of winter grains was generally completed within the optimum time periods last fall and adequate snow cover kept winterkill to a minimum. Owing to the early arrival of spring, spring grains were sown about two weeks before the normal sowing time, greatly lowering the vulnerability of ripened grain to frost damage this fall. Weather conditions since planting have been near optimal. Seasonal temperatures combined with alternating periods of rain-fall and sunshine have promoted the development of both winter and spring grains and maintained soil moisture reserves at adequate levels in most areas. Current weather patterns suggest that these conditions will continue through the end of July. [REDACTED]

[REDACTED] In late May, the US agricultural attache reported that crops, especially winter rye, were at full height and growing strongly in parts of Belorussia. [REDACTED]

[REDACTED] The excellent crop vigor observed on May and June LANDSAT imagery suggests that record yields may be attained in some areas, given continued favorable weather. [REDACTED]

Even though the most critical part of the season has passed with no significant problems, a good crop is not yet assured. The harvest is just beginning in the southern oblasts of this region and grain plants are still ripening in areas farther north. Excessive rainfall during the peak harvesting period in August could seriously hamper combining operations and lead to sizable losses in both grain quantity and quality—as occurred in 1980. [REDACTED]

The New Lands

Crop prospects east of the Ural Mountains—the principal spring wheat area—are also favorable now despite the shortfall in sown area. Planting began as usual in mid-May and was completed in most of the key producing oblasts within the scheduled time

frames. A freak spring snowstorm in northern Kazakhstan disrupted planting operations for a few days, but we believe the resulting increase in soil moisture more than offset the sowing delays. [REDACTED]

With roughly half of the crop season still ahead, future weather conditions will play the pivotal role in determining final output. Three days of extremely hot temperatures in the third week of June have probably already reduced potential yields over a widespread area of northern Kazakhstan and West Siberia. Because plant vulnerability to hot temperatures was low and subsequent rainfall boosted soil moisture reserves, we expect that losses were small. [REDACTED]

[REDACTED] A similar bout of hot, dry weather during the second half of July, however—as grain plants pass through the critical flowering stage—would probably cause extensive crop damage. [REDACTED]

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Appendix B

USSR: 1983 Outlook for Major Nongrain Crops

As of mid-July, the outlook for the major nongrain crops in the Soviet Union—sunflowers, sugar beets, vegetables, potatoes, and cotton—is good.⁶ We estimate that these crops will show increases over 1982 production and exceed the average of recent years. If this forecast holds, output of sunflowers, sugar beets, and potatoes would be up for the second straight year, vegetable production would match last year's record crop, and the harvest of cotton would return to a near-record level. [REDACTED]

Factors Favoring Major Nongrain Crop Production⁷

The early onset of spring and favorable weather to date are the primary factors favoring increased production of nongrain crops this year. Sowing was completed well within the optimal time, decreasing the likelihood that harvesting will be disrupted by winter weather. At harvest last year, for example, cotton production was reduced because of cold, wet conditions, and many sugar beets and potatoes were left frozen in the ground. [REDACTED]

The increased availability of chemical fertilizer this year has also boosted prospects for nongrain crops. Plans for the delivery of chemical fertilizer to agriculture call for a 2.7-million-ton increase (on a 100-percent equivalent basis) or 13.4 percent over 1982 deliveries. The 1983 plan also calls for a 7-percent increase in the availability of chemical plant protectants. According to official Soviet statistics, production of chemical fertilizer and chemical plant protectants during January-May 1983 was up 10 and 4 percent, respectively, over the corresponding period last year. Given adequate soil moisture, properly applied fertilizer is the single most important factor in raising Soviet crop yields. [REDACTED]

⁶ Estimates are based on past production trends, daily meteorological data, local press articles, reports from US agricultural attaches, and [REDACTED] LANDSAT [REDACTED]

At present, no crop growth models are employed. [REDACTED]

⁷ The factors discussed in this section also impact favorably on this year's Soviet grain crop prospects and have been incorporated into our grain estimate accordingly. [REDACTED]

Expanded implementation of the collective contract⁸ and increased procurement prices could also have a positive effect on this year's harvests. According to Soviet press reports, the amount of cropland farmed under the collective contract system has increased considerably from the 8-percent level in 1982, especially in Central Asia, Belorussia, Moldavia, the Baltics, and the Volga and Central Chernozem regions. The all-union conference devoted to the collective contract system held in Belgorod in March 1983 cited 20 to 30 percent more output per unit area, higher labor productivity, lower output cost, and higher return on investments over the piecework method. The widespread implementation and continued use of the collective contract system will depend on the ability to provide adequate and timely inputs to the units, stability of wage rates and their linkage to end results, and independence of units. New procurement prices for potatoes, sugar beets, vegetables, and other crops took effect on 1 January 1983. [REDACTED]

Sunflowers

We expect a good sunflower crop this year of 5.5-6.0 million tons, above last year's output of 5.3 million tons but well below the 6.6-million-ton plan. This estimate is based on an average sown area of 4.2 million hectares and yields above the recent five-year average. We do not expect the plan to be reached because of the low soil moisture conditions in April/May in the Ukraine and North Caucasus, the principal sunflower regions. The late May/early June *sukhovey* conditions in the southern European USSR had a minimal effect on sunflowers. Germination had just

⁸ Under the collective contract system, the farm assigns an area of land and supplies machinery and other inputs to a group of workers who agree to base their income on the output of the land. The goal is to eliminate piecework and hourly wages, which reward only the quantity of work done and give workers little incentive to perform the high-quality work necessary for a good harvest. [REDACTED]

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occurred when the *sukhovey* hit and subsequent rain-fall benefited the crop. Since early June, growing conditions have been good and the weather outlook is favorable for the remainder of July. []

Sugar Beets

We estimate production of sugar beets in the 80- to 85-million-ton range, substantially better than last year's harvest of 71 million tons but far short of the 96-million-ton plan. During 1978-82, output of sugar beets averaged 76.5 million tons. This year 40 percent more of the sugar beet crop was sown by 2 May than in 1982, and by mid-May sowing was virtually complete on an area of about 3.5 million hectares. The early planting combined with generally good weather to date augurs well for above-average yields. Nevertheless, we believe that a shortage of quality seed and insufficient herbicides will hold output well below plan. []

In addition, the Soviets are employing improved cultivation techniques, better seed, and increased procurement prices to boost sugar beet production in 1983. The price increase for the country as a whole has not yet been reported, but in Belorussia it was 16 percent. According to Soviet press reports, improved cultivation methods—including the application of more fertilizers and pesticides, increased plantings on fallow land, and timely sowing—are being used on more than 1.5 million hectares in 1983, 400,000 hectares more than last year. Graded or coated monogerm seed⁹ is being used more extensively this year, reducing the need for labor to thin plants. The lack of adequate herbicides to control weeds, however, could offset the labor savings. Collective contracts may encourage more timely harvesting and transport of beets to processing facilities, thereby reducing losses of sugar content. []

Vegetables

We anticipate another record or near-record vegetable crop of 28-30 million tons from an area of 1.72 million hectares, up slightly from last year. The production target for vegetables is 29.8 million tons, less than a 3-percent increase over the record output

in 1982 of 29 million tons. Since the early 1970s there has been a general upward trend in vegetable production, and we expect this trend to continue. Approximately 50 percent of the vegetables are grown on irrigated land, and weather in the remaining areas has been favorable. []

Marketing and price changes will also aid vegetable production in 1983. The procurement prices for the principal types of vegetables—cucumbers, tomatoes, cabbage, carrots, table beets, onions, garlic, and others—have been raised. Since last year, *sovkhozes* and *kolkhozes* have been permitted to market up to 10 percent of their planned vegetable procurement in the local collective farm markets and cooperatives. This should help circumvent some of the losses due to poor transportation and handling. []

Potatoes

Our estimate of potato production is 80-85 million tons, an increase over the 78 million tons reported in 1982 and slightly above the recent five-year average of 79 million tons. On the basis of press reports, we estimate this year's sown area to be the same as the recent average of 6.9 million hectares. Early planting and favorable weather thus far have gotten the crop off to a good start. A potentially serious pest problem, however, will probably prevent the Soviets from attaining their goal of 89 million tons. Warm temperatures last winter may lead to a higher incidence of soil-born parasites and plant diseases. In fact, the Soviet press has reported that the Colorado beetle is again threatening the crop. The severity of the infestation will be a major factor in determining the final output of potatoes. []

Cotton

We estimate a near-record cotton harvest of 9.5-10 million tons, exceeding last year's 9.3-million-ton crop and the 1983 plan of 9.2 million tons. The 1982 crop was reduced primarily because winter weather precluded the completion of the harvest. A repeat of this problem is not likely this year because the 3.2-million-hectare cotton crop was sown in record time. Some

⁹ A monogerm seed produces a single sprout in contrast to a seed of multigerm varieties, which results in a cluster of sprouts that must be thinned manually. []

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Table 2
USSR: Production of Nongrain Crops

	Area (million hectares)	Yield (quintals per hectare)	Production (million tons)
Sunflowers			
1978-82 average	4.3	11.6	5.0
1981	4.2	11.0	4.6
1982 plan	NA	NA	6.54
1982	4.2	12.6	5.3
1983 plan	NA	NA	6.6
1983 estimate	4.2	13.1-14.3	5.5-6.0
Sugar Beets			
1978-82 average	3.7	206.8	76.5
1981	3.6	167.0	60.6
1982 plan	NA	NA	98.2
1982	3.5	203.0	71.0
1983 plan	NA	NA	96.1
1983 estimate	3.5	228.6-242.9	80.0-85.0
Vegetables			
1978-82 average	1.7	161.1	27.4
1981	1.7	156.5	25.6
1982 plan	NA	NA	NA
1982	1.7	170.6	29.0
1983 plan	NA	NA	29.8
1983 estimate	1.7	164.7-176.5	28.0-30.0
Potatoes			
1978-82 average	6.9	114.2	78.8
1981	6.9	105.0	72.0
1982 plan	NA	NA	88.4
1982	6.9	113.0	78.0
1983 plan	NA	NA	89.0
1983 estimate	6.9	115.9-123.2	80.0-85.0
Cotton			
1978-82 average	3.1	30.0	9.3
1981	3.2	30.4	9.6
1982 plan	NA	NA	9.33
1982	3.2	29.1	9.3
1983 plan	NA	NA	9.2
1983 estimate	3.2	29.7-31.2	9.5-10.0

cotton reseeded occurred in Tajikistan when heavy rains in early May washed away a considerable portion of the seedlings. However, by mid-May resowing was complete, according to Soviet press reports.

Water availability is not likely to be a serious production-limiting factor for this year's cotton crop. At sowing time, reservoir and river levels were low because of the continued drought in Central Asia. For the past two months, however, Central Asia has received well-above-normal rainfall, which should have increased water supplies to a level sufficient to sustain the crop until harvest.

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